**Unstirred Digital Baths
NE2D Series**

Contents

About this Manual
This user Manual contains instructions which must be followed in order that the product is operated correctly.

General Notes

Please observe the following safety precautions:

1. Fill the tank prior to connection to power supply.
2. Connect only to a power supply with the corresponding voltage to that specified on the rating label positioned on the rear of the unit.
3. Ensure the power supply has a safety earth (ground) terminal.
4. Ensure the mains switch and power supply connector are accessible during use.
5. The mains supply cord fitted to this products is a heat resistant type and should be replaced by an equivalent type.
6. Do not block ventilation slots during use and follow installation instructions.
7. Always follow good laboratory practice by ensuring substances being heated present no risk of a hazard (explosion, implosion or release of toxic or flammable gases) or that these have been addressed. When heating substances where liberation of gases occurs suitable extraction should be used.
8. Use only liquids specified in this Instruction Manual within their specified temperature range. If the alarm lamp is illuminated the liquid temperature may be above its recommended maximum.
9. Use caution when topping up or draining the tank as the liquid in the tank may be very hot or cold.
10. Drain before moving the bath. Allow the liquid to cool to 40°C before draining.
11. In the event of the over or under temperature alarm being illuminated do not touch the liquid as it may be very hot or cold.
12. Recommend using a Lid above 60°C. Take care when lifting the lid - steam and hot vapours can cause scalding.
13. Always use the display or a thermometer to check the temperature - do not touch liquid.
14. If this product is not used in accordance with these instructions, then basic safety protection afforded by the water bath may be affected.
15. Before using any cleaning or decontamination method except those recommended, check with your distributor that the proposed method will not damage the equipment.

Amendments

Issue 1	July	1991	Initial issue instruction book
Issue 2	February	1993	Revised, added 28l version
Issue 3	June	1993	B range introduced
Issue 4	August	1994	Instruction book revised layout
Issue 5	May	1995	CE version
Issue 6	September	1995	Multi-lingual version
Issue 7	May	1996	Update address
Issue 8	November	1997	NE1-22/28, NE1B-14 fuse revision
Issue 9	Sept	1999	F to T
Issue 10	July	2000	Complete update
Issue 11	July	2001	Product updates for 2002
Issue 12	March	2004	Product update 2004
Issue 13	June	2004	Corrections and updates.

Symbols/Beschriftungssymbole/Simboli/Symboles/Símbolos

Caution refer to Instruction
Vorsicht! - siehe entsprechenden Hinweis.
Attenzione, fare riferimento al manuale.
Attention, se reporter aux instructions.
Precaución, consultar las instrucciones.

Protective earth conductor terminal.
Schutzleiterklemme
Morsettiera conduttore di massa.
Borne de conducteur de protection par mise
à la terre.
Borna conductora protectora de puesta a
tierra.

Location

The surface on which the product is to be located should be smooth, level and sturdy. Use in a ventilated room.
Ambient room temperature 5°C to 40°C. Maximum humidity 80% for temperature 31°C decreasing to 50% at 40°C.

Product is designed for laboratory use.

Unpacking

Remove the product from its packaging. Any damage to the product notify your dealer immediately. Retain packaging over warranty period. Contents consist of a bath, stainless steel false base, power lead and instruction manual.

Assembly

Place the false base inside the bath. Fit the power lead into the socket at rear.

Safety

Do not touch any electrical contacts or open any closure panels RISK OF ELECTRICAL SHOCK!

Power Supply Lead and Connection to Electrical Supply

Fit the power lead by plugging it into rear of the water bath and then to mains supply.

Before connecting the product to the electrical supply, check the information on the rating label is compatible.
IF IN DOUBT CONSULT AN ELECTRICIAN. THE PRODUCT MUST BE EARTHED!

Where the mains supply or plug connection differs refer to local regulations or qualified electrician.

Liquid Level

Minimum liquid level - must cover the top of the false base by 40mm
Maximum liquid level - must not exceed the ridge in the tank.

Always ensure the product is disconnected from the electrical supply when emptying and filling.

Suitable Liquids

Operating temperatures of:

Ambient to 99°C	For general use we recommend: - Distilled water. - Heat transfer liquid. The LB range is formulated for temperatures from -45°C to 90°C and provides complete protection from freezing and algae growth and safeguards against corrosion. See accessories for the full range available.
Note:	Above 60°C or below room temperature it is recommended that to achieve optimum performance the bath should be covered with SL1 lid or polypropylene spheres.

Operating Instructions

Switching ON and OFF

Switching ON - the unit may be turned ON (I) at the mains switch located at the rear. When ON (I) the switch is illuminated and unit performs a self test where all segments of the 3 digit LED display and indictors illuminate.
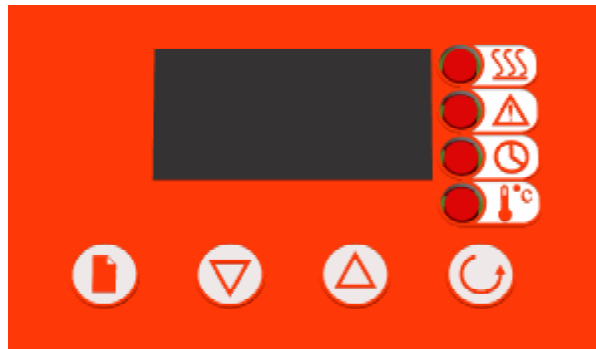
Switching OFF - the unit may be turned OFF(O) at the mains switch located at the rear. All temperature and time values remain in memory.

Heating Control Modes

The Clifton NE2D range feature an advanced PID temperature controller that can be used in either of the following ways:

- single point temperature control referred to as 'Set Point 1'.
- process control with two temperatures and a time setting, 'Set Point 1' and 'Set Point 2'.

Control Panel

Keyboard Description

FUNCTION
- Used to scroll through parameters.
- Used to set timer.

DOWN ARROW
- Used to decrease a value. Hold continously to scroll.
- When pressed for more than 1.5 seconds displays set point 1 value.

UP ARROW
- Used to increase a value. Hold continously to scroll.
- When pressed for more than 1.5 seconds displays set point 1 value.

RUN
- When pressed for more than 1.5 seconds will activate/deactivate timer function.
- Used to turn off buzzer.

LED Indicators

HEATING INDICATOR
When LED is illuminated bath is being heated.

OVER AND UNDER TEMPERATURE ALARM INDICATOR
LED is illuminated when bath temperature is either 4°C above or 4°C below set temperature.

TIMER INDICATOR
- Continous illumination indicates timer is set.
- Flashing illumination indicates timer is running back/counting down.
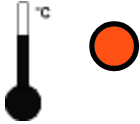
SET TEMPERATURE INDICATOR
- Continous illumination indicates Set Point 1 value is shown on display.
- Flashing illumination indicates Set Point 2 value is shown on display.

Single Point Temperature Control

Setting Temperature - 'Set Point 1'

1. Press and hold up or down arrow for more than 1.5 seconds to display value at Set Point 1.
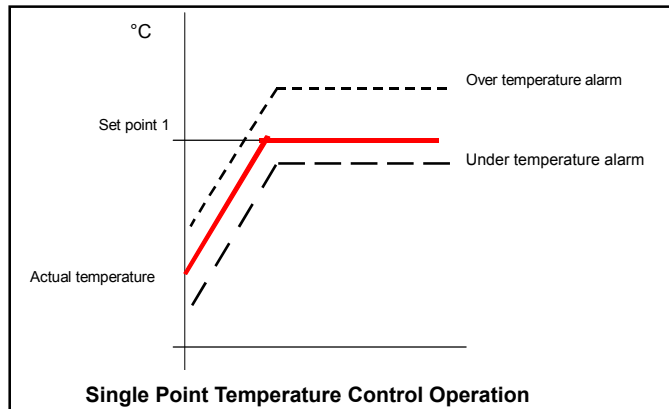
The 'set temperature' indicator will illuminate.

2. Use up and down arrow keys to select required temperature.

3. After 2 seconds the display will revert to show actual liquid temperature. Heater indicator will illuminate. The controller features an over or under temperature alarm which is automatically set 4°C above and 4°C below Set Point 1.
If the actual temperature rises or falls beyond this value the alarm is activated.

Heating Mode - The Clifton unstirred bath is now set and will heat and control the liquid to set temperature.

Single Point Temperature Control Operation

Process Control with Two Temperature Settings and Timer

Setting Temperature - 'Set Point 2'

1. Follow instructions for setting temperature at Set Point 1.

2. Press and hold RUN button for more than 1.5 seconds to show value at Set Point 2.

The timer indicator will illuminate.

3. Use up and down arrows to select required temperature for Set Point 2.

The 'set temperature' indicator will illuminate.

4. After a brief delay display will revert to show actual liquid temperature. Heater indicator will illuminate. The controller features an over or under temperature alarm which is set 4°C above and 4°C below Set Point 2.
If the actual temperature rises or falls beyond this value the alarm is activated.
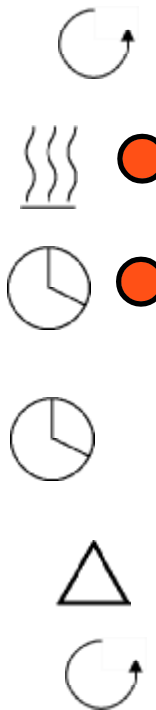
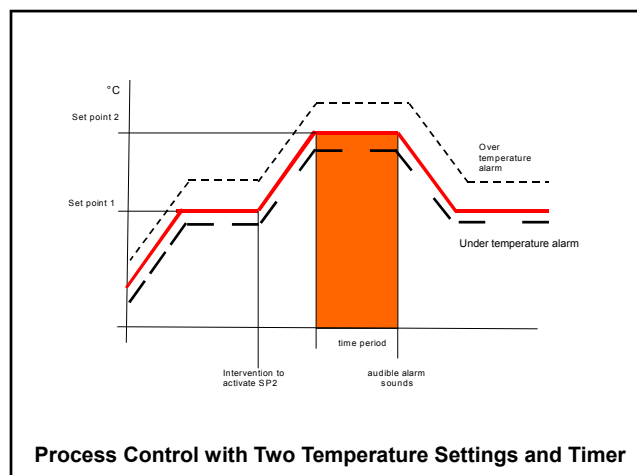5. Press RUN button for 1.5 seconds to exit set point 2 mode.

Setting Time

1. Press FUNCTION button until "t" appears on the display. It will then alternate between showing "t" and time in minutes.

2. Press either up or down arrow to select desired number of minutes. The maximum time setting is 999 minutes.

3. Press FUNCTION button to save setting.

Process Control Operation

1. Operation can be started once bath temperature is at set point 1. To start process (using set point 1, set point 2 and run back timer) press and hold RUN button for more than 1.5 seconds.

Heating indicator will illuminate indicating heater and control activity raising the temperature of the liquid to 'set point 2'.

Timer indicator will illuminate.

2. On reaching 'set point 2' the timer indicator starts to flash showing the timer is running. The display will automatically switch back to show actual bath temperature.

3. To view time remaining, press UP ARROW button, time remaining is displayed.

4. An audible beeping and "End" message indicates timed period has finished. Press RUN button to deactivate buzzer and clear "End" message.

5. The bath temperature will fall to 'set point 1'.

6. The process can be re-started at any time and values are retained in memory.

Process Control with Two Temperature Settings and Timer

Under Temperature Alarm - Automatically Set

The under temperature alarm is automatically set 4°C below either 'Set Point 1' or 'Set Point 2'. When in alarm condition the 'over and under temperature ' alarm indicator illuminates and actual bath temperature is shown. Once water temperature has risen above alarm setting then indicator clears and actual bath temperature is displayed.

Always investigate the cause of the Under Temperature Alarm.

Over Temperature Alarm - Automatically Set

The over temperature alarm is automatically set 4°C above either 'Set Point 1' or 'Set Point 2'. When in alarm condition the 'over and under temperature ' alarm indicator illuminates and actual bath temperature is shown. All heating is switched off. Once water temperature has fallen below alarm setting then indicator clears and actual bath temperature is dsplayed.

Always investigate the cause of the Over Temperature Alarm.

Cleaning

Important - please follow these cleaning instructions to avoid possible damage to the unit which may affect its performance.

Disconnect the product from the electrical supply before cleaning.

The water bath must be cleaned at regular intervals:

Casework - wipe with a cloth or sponge soaked in warm soapy water.

Stainless steel tank - descale regularly to maintain it in as new condition ensuring the corrosion resistance and normal operating conditions are maintained throughout its working life. Descale by adding 1 litre of vinegar to water and gently heating to 50°C for an hour, empty, and brush the lime away. Rinse thoroughly afterwards.

NOTE: Although the stainless steel tank is resistant to chloride containing solutions it is important to avoid high concentrations of halogens - especially chloride. With such a high quality and resistant tank it may show rust, often deposits from external sources. These deposits can be removed with nitric acid (10%) on a cloth. *WEAR PROTECTIVE EQUIPMENT!*

Warranty

The water bath is covered by a 3 Year Warranty against defects in materials and workmanship. In the case of a problem contact your Distributor for advice or our Service Department at Nickel Electro Limited, Oldmixon Crescent, Weston Super Mare, North Somerset BS24 9BL, England, Tel +44 1934 626691 Fax +44 1934 630300.

Portable Appliance Testing

When conducting testing, ensure it is conducted by a qualified person.

DO NOT PAT TEST THE BATH UNLESS IT CONTAINS WATER.

THIS EQUIPMENT MUST NOT BE FLASH TESTED!
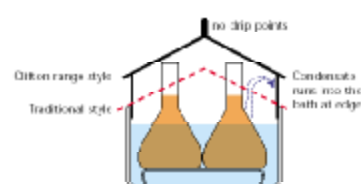
ACCESSORIES

NE2D Series

Stainless Steel Lids

The use of a lid helps reduce evaporation and assists in keeping the samples free from contamination.
- Stainless gable lids with a high profile allowing extended use of the bath area, right into the edges of the tank.
- Insulated handles.
- Design ensures that all condensate goes back into bath.
- No 'drip' points to contaminate samples.
- Ringed lids allow necks of immersed flasks to protrude.

GL1-4	Gabled lid, food grade plastic, for 4 litre baths
GL1-14	Gabled lid, food grade plastic, for 14 litre baths
GL1-22	Gabled lid, food grade plastic, for 22/28 litre baths

SL1-4	Gabled Lid for 4 Litre Bath
SL1-8	Gabled Lid for 8 Litre Bath
SL1-14	Gabled Lid for 14 Litre Baths
SL1-22	Gabled Lid for 22 and 28 Litre Baths

Racks

All 304 stainless steel construction

6872	36 holes x 13mm diameter
6870	26 holes x 17mm diameter
6873	18 holes x 19mm diameter
6871	16 holes x 26mm diameter
6900	12 holes x 32mm diameter

Overall dimensions of racks: 270mm long x 70mm wide, height to top of lifting handles 138mm

Reference Thermometer

TC-1	Thermometer clip with bent stem spirit filled thermometer, lies flush with top edge of the bath to prevent accidental damage. Scale: 0-100°C in 2°C graduations.

Drain Tap

BX0688	Drain Tap - Can be fitted to drain outlet featured on 22 and 28 litre baths.

Spheres, Polypropylene

Provides a floating lid on water baths to minimise evaporation and allows easy immersion/removal of flasks etc. Number of packs required providing a single layer:

Bath Size	No of packs required	
4 litre	1 pack	
8/14 litre	2 packs	
22/28 litre	4 packs	
Cat No	Sphere Diameter	Pack Quantity
BP0368	20mm	200

Fitting Accessories

Gabled Lids
SL1 Range
GL1 Range

Position the lid over the bath and lower into place. The lids are designed to fit snugly into the bath so that condensate runs into the bath.

Test Tube Racks
687* Range

Place the loaded test tube rack into the bath on top of either the stainless steel perforated shelf or the raised shelf.

Thermometer Clip

This can be positioned anywhere on the perimeter of the bath by cliping over the edge. The thermometer then lies flush with the top edge of the bath to prevent accidental damage.

Polypropylene Spheres

Place on top of the water/oil to provide a floating lid.

Drain Tap

A drain tap outlet is featured on the 22, 28 and 56 litre sizes. Remove the blanking plug and screw the tap into position.

Spares/Service Diagram

PART	NE2-4D	NE2-8D	NE2-14D	NE2-22D	NE2-28D	NE2-56D
1	SA01534	SA01535	SA01536	SA01537	SA01538	SA01522
2	EX0893	EX0893	EX0893	EX0893	EX0893	EX0893
3	——	——	——	——	——	EE0825
4	EE0562	EE0859	EE0825	EE0826	EE0826	EE0826
5	——	——	——	——	EX0812	EX0550
6	EX0854	EX0854	EX0854	EX0854	——	——
7	EF0095	EF0094	EF0094	EF0632	——	——
8	EX0512	EX0512	EX0512	EX0512	EX0512	EX0512
9	EX0869	EX0869	EX0869	EX0869	EX0869	EX0869
10	ET0835	ET0835	ET0835	ET0835	ET0835	ET0835

DESCRIPTION — DIGITAL WATERBATH

UNSTIRRED BATHS

NE2-D series digital

These water baths provide a stable temperature environment ideal for meeting quality control requirements. Featuring a digital PID temperature control with smart technology for adaptive temperature control maintaining accurate working temperatures. Also featuring auto alarm settings, illuminated on/off switch, heater, timer, set temperature and over and undertemperature indications.

NE2-14D

Features Include:

- Sensitivity: ±0.2°C
- Uniformity: ±0.1°C
- Temperature range: ambient +5°C - 99°C
- PID temperature control
- Easy to read display to 1°C resolution
- Totally unobstructed, crevice free, stainless steel tank
- Concealed heater and sensor
- Stainless steel tank
- *corrosion resistant and easy to clean*
- Heater with safety cut-out
- Sturdy construction
- *powder coated for a chemical resistant exterior*
- Safety cut-out
- Over and under set point temperature indication.
- Removable perforated stainless steel false base supplied
- Side lifting handles
- *for ease of transportation*
- Lids optional extra
- *accessory lid recommended to reduce evaporation above 60°C*

Cat No.	NE2-4D	NE2-8D	NE2-14D	NE2-22D	NE2-28D	NE2-56D
Temperature						
Display/resolution			digital LED / 1°C			
Range			ambient + 5°C - 99°C *•			
Control			PID			
Sensitivity @ 45°C			±0.2°C			
Uniformity @ 45°C			±0.1°C			
Over temp. alarm			+4°C with heater cut-off, indication			
Under temp. alarm			-4°C with indication			
Timer						
Display/resolution			1 minute			
Settings			variable 0-999 minutes			
Time cycle			activated @ set point 2			
Cycle end			audible buzzer and "end" message			
General						
Capacity litres	4 l	8l	14l	22l	28l	56l
Internal dims	300x150 x150	300x240x150	325x300x150	500x300x150	538x332x290	620x500x200
Overall, dims	332x185x290	332x270x290	361x332x290	538x332x290	715x332x290	660x540x260
Heater, Watts	400W	800W	1000W	1500W	1500W	2500W
Voltage			120V or 230V models			

* Above 60°C or below room temperature it is recommended that to achieve optimum performance the bath should be covered with SL1lid or polypropylene spheres.

• The water bath has the capability of achieving 100 °C for intermittant use. It is not intended as a Boiling bath.

CE

EC Declaration of Conformity

We herewith confirm the following product

NE2D Unstirred waterbath range

Conforms with the requirements outlined by following European Directives.

Low Voltage Directive (73/23/EEC)

EMC Directive (89/336/EEC)

We confirm the declaration

NICKEL-ELECTRO Ltd.

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North Somerset, BS24 9BL, United Kingdom.
Tel: +44 (0)1934 626691
Fax: +44 (0)1934 630300
Email: clifton@nickel-electro.co.uk
www.nickel-electro.co.uk

Conforms with the requirements of following Standards

BS EN 61010:1:1993
BS EN 61010:2.010:1995
Safety requirements for electrical equipment for
measurement, control and laboratory use.

BS EN 61326:1997
Electrical equipment for measurement control and
laboratory use - EMC requirements.

**Nickel-Electro Ltd is also registered ISO9001
reference No. Q09820**

Final Inspection and Electrical Safety Test Report